

NOTES ON CHRYSOPHANUS HYPOPHLÆAS AND ITS ALLIES,
WITH DESCRIPTION OF A NEW SPECIES.

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Chrysophanus arethusa, n. sp.—Antennæ black and white-ringed, clubs black above, white, black-tipped beneath. Palpi brown above, whitish at sides and beneath. Eyes ringed with white. Head and thorax dark brown. Abdomen dark brown above, whitish or cinereous beneath.

♂.—Primaries sharply acute at the apices, the outer margin almost straight. Dark smoky-brown, with a handsome bronze lustre, overlaying and sometimes almost completely obscuring a shining fulvous ground, which is most evident in the cell and outer central portion of the wing. In only one out of five specimens is there a well-defined brown outer marginal border. A large rectangular black discal spot on the cross vein at end of cell, a smaller one in the centre of cell, and sometimes a third, smaller and ill-defined, near the base. A transverse row of six interspaceal black spots beyond the cell, varying much in size and distinctness; the upper three, the next two, and the sixth (geminate) in sets obliquely towards anal angle. Secondaries dull fuscous-brown, with a broad fulvous marginal band from anal angle to about two-thirds of the way to apex. A narrow black discal spot, and sometimes a black point in cell. An indistinct transverse row of small black spots just beyond the cell, another of larger spots on the inner edge of the fulvous band, and between these rows is sometimes a series of from two to five irregular metallic blue points. A marginal row of five black spots within the band. Fringes pale fuscous. Beneath, primaries pale yellowish-fulvous, apices and inner and outer margins cinereous. The spots of the upper side reproduced, but more clearly defined, and most of them pale-ringed, and a small sub-basal one in cell present in all the specimens. A transverse submarginal row of irregular blackish blotches in lower half of wing. Secondaries cinereous, with sometimes a faint line or discal mark, and sub-basal, intermedial and postmedial transverse rows of minute brown or blackish points, rarely all distinct, and in most specimens partially obsolete. Sometimes some small paler dashes exterior to the outer row. A very faint orange-red, crenate submarginal line, narrow, sometimes edged anteriorly with ochreous. Fringes almost concolorous.

♀.—Primaries with apices less acute, and outer margin more convex

than in the ♂, with much less of the brown suffusion, but a well-defined brown outer marginal band, and costal area somewhat broadly brown.

Expanse: ♂ 30-35 mm.; ♀ 29-33 mm.

Described from five males and eight females. One male from the foothills, "Lineham's lower log camp, south fork of Sheep Creek," about thirty-five miles south-west of Calgary. All the rest from near the spruce woods about ten or fifteen miles nearer Calgary, July 5th-20th, all but three of the males quite fresh, though one broken in the mail. Types, ♂ and ♀ in U. S. National Museum, the rest co-types. Of these a pair are in the collection of the Entomological Society of Ontario, another pair in that of Dr. Henry Skinner, and the rest in that of the author. Dr. Fletcher and Dr. Holland each have a few specimens. I know of no others.

This may be looked upon as the Rocky Mountain representative of *Hypophleas*, from which it shows some striking differences, particularly in the male sex. It is larger, has more acute apices, and straighter outer margin. The shining bronze of the dark smoky suffusion, which generally obliterates the marginal band, renders some of the males far more handsome than any of the long series of its allies that I have from this continent, Europe or Asia. Beneath it differs in the strong tendency towards obsolescence of the spots and orange submarginal line on secondaries. In the absence of any widely-accepted definition of what a "species" really is, from its well-marked form and apparently isolated position on the entomologically-explored portion of North America, it is at least as deserving of a specific name as a large number of well-known forms on our lists. It has, however, some much nearer allies in some of the so-called forms of *phleas* that I have from the Himalayas and from Syria under the names of *eleus* and *stygianus*, which, according to the Staudinger Catalogue, refer to the same form, and occur throughout the south palearctic region. And were I treating of the butterflies of the world, in which a tendency to lump would be scarcely avoidable, I should have left the Calgary form undescribed, and probably followed European authors in treating our common eastern species as a varietal form of *phleas*.

Hypophleas was described by Boisduval in a French journal from North American specimens by comparison with *phleas*. A translation is: "Very near *phleas*, but smaller, with the spots more distinct, the wings more rounded. The under side of secondaries of an ashy whiteness, with the fulvous marginal band well marked. North of California. It is found

in all the Northern United States." I have been unable to procure specimens from further west than Ontario or Illinois. In the Staudinger Catalogue, Lapland, Northern Scandinavia, Saján-Geibet (Siberia), Amur and North America are quoted as localities for "var. *hypophleas*," and some that I have bearing labels of some of those Old World localities would pass anywhere as North American specimens, amongst which there is also an occasional tendency to lose the spots, and so assimilate the typical European form. Besides having more pointed wings, the majority of my European and Asiatic specimens show a more decided tendency to develop tails in the secondaries than either the old or new forms of our continent; and it is a fact well worthy of observation that in some, though not all, of those most closely resembling ours in other respects, this tendency is least. *Hypophleas* is recorded by Capt. Gamble Geddes as occurring in the region of the Crow's Nest Pass, in Southern Alberta. Dr. Fletcher tells me that if any such specimens were preserved they should be in the Geddes collection at Ottawa, but that he is unable to find any. With one or two small females only to hand, if the spots were unusually well developed, *arethusia* might have been passed as *hypophleas* even by one well acquainted with that species without comment. The name I have chosen is purely fanciful.

GEOMETRID NOTES—No. 2.

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In 1873 Dr. Packard described a species (5th Rep. Peabody Acad. Sci., 1878) under the name of *Cleora pellucidaria*, having before him two males, one from Maine (Pack.) and the other Albany (Lintner). If my memory serves me correctly, I saw the Maine specimen when at Cambridge in going over his collection. Shortly afterward, through the kindness of Mr. D. H. Haight, I received a female of the same species, taken near his home at Copper Cliff, Ont., Sept. 9, '04, and, in a recent visit to Albany, N. Y., found in the Lintner coll. the original co-type described by Dr. Packard, bearing a label in his handwriting. In the Monograph, page 453, he refers to this species, having a doubt at that time of its validity. The species is a good one, and differs from *semiclusaria*, Walk., by its larger size, stouter build, its uniform soft gray colour, and by having the front a darker smoky hue, while in *semiclusaria*